REMARKS

Applicants respectfully request further examination and reconsideration of the rejections based on the amendments and arguments set forth below.

Claim Rejections - 35 U.S.C. §103

In the above referenced Office Action, Claims 1-14 and 17-20 were rejected as being allegedly unpatentable over U.S. Patent No. 5,748,875 (hereinafter "Tzori") in view of "Debugging with The GNU Source-Level Debugger" by Richard M. Stallman and Roland H. Pesch (hereinafter "Stallman"). Applicants respectfully traverse.

Independent Claim 1 recites a limitation whereby a virtual microcontroller operates in lock-step synchronization with the microcontroller by virtue of their identical operation, as claimed. Accordingly, the virtual microcontroller and the actual microcontroller execute the same instruction at the same time. Independent Claim 1 further recites a limitation whereby a breakpoint lookup table with a break bit associated with each of a plurality of instruction addresses, as claimed. Accordingly, each instruction address has a corresponding break bit where setting the break bit enables the breakpoint command and not setting the break bit disables the breakpoint command. Independent Claim 1 also recites a limitation whereby a breakpoint controller sends a break message to the microcontroller whenever an instruction address is encountered that is associated with a set break bit, as claimed.

In contrast, Tzori discloses that the logic simulation/emulation system includes a hardware pod, receiving a digital logic IC, having two configurable logic ICs (see Tzori, col. 8, lines 24-31). Tzori further discloses that the

simulation process receives and processes the response data from the digital logic IC (see Tzori, col. 12, lines 11-19). The Applicants do not understand the cited portion of Tzori to either teach or suggest a virtual microcontroller and a microcontroller operating in lock-step synchronization by virtue of their identical operation, as claimed.

Moreover, Tzori discloses that the simulation process downloads the bit-slice stimulation control data into the pod and resumes the simulation to perform processing that does not depend upon response data from the digital logic IC (see Tzori, col. 11, lines 25-31). Therefore, Tzori in fact teaches away from the recited limitation of operating in lock-step synchronization by virtue of their identical operation as claimed because the simulation process simulates independent of the response data from the digital logic IC. As such, the Applicants respectfully request the withdrawal of the rejection.

The above referenced Office Action asserts that Tzori is extremely applicable to the use of breakpoints by virtue of stimulus-response method of execution. The Applicants respectfully disagree.

The Applicants understand Tzori to teach initializing configurable logic ICs that are contained in a pod, by loading configuration data into it and performing a typical simulation cycle by preparing and transmitting stimulation-control data for stimulating a digital logic IC (see Tzori, col. 11, lines 1-20). The simulation process downloads the bit-slice stimulation control data into the pod and thereupon to the configurable logic ICs, and resumes the simulation to perform processing that does not depend upon response data from the digital logic IC (see Tzori, col. 11, lines 25-38). "Loading stimulation control data into the

configurable ICs specifies the stimulus signals which various stimulus/response cells are to supply to digital logic IC during the stimulation-response cycle" (see Tzori, col. 11, lines 39-43). As a result, each individual stimulus/response cell transmits a stimulus signal to the digital logic IC in the pod and receives a response therein, which is stored and transmitted to the server and to the simulation process for processing (see Tzori, col. 11, line 43 to col. 12, line 19). Accordingly, Tzori teaches a simulation process system that initializes configurable logic ICs, sends a stimulus signal to the digital logic IC and receives a response, and resumes processing that <u>does not</u> depend upon the response data from the digital IC. The Applicants do not understand Tzori to disclose <u>lock-step synchronization by virtue of their identical operation</u>, as claimed nor do the Applicants understand Tzori to disclose or to be of any relevance what so ever to use of breakpoints, as claimed. As such, the Applicants respectfully request the withdrawal of the rejection.

The above referenced Office Action further asserts that it would have been obvious to a person of ordinary skill in the art that "Tzori's system and method are readily adaptable to include standard, well-known debugging techniques such as the use of breakpoints" because many types of breakpoints require evaluations of logical expressions and since Tzori teaches processing the response data, therefore processing logical expressions such as breakpoints would have been obvious. The Applicants respectfully disagree because processing a response does not necessarily make the use of breakpoints obvious. Accordingly, the Applicants respectfully request the withdrawal of this rejection.

Furthermore, the above referenced Office Action takes <u>official notice</u> and uses Stallman to show that the use of breakpoints, implemented by using table addresses and a flag to indicate the presence of a breakpoint at a given address is extremely well known in the art. The Applicants respectfully disagree with this assertion for reasons setout below. Applicants respectfully direct the Examiner to MPEP §2144.03(E), which states that "[i]t is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection was based." Accordingly, the Applicants respectfully invite the Examiner to "provide documentary evidence in the next Office action if the rejection is to be maintained. See 37 CFR 1.104(c)(2). The Board [or <u>examiner] must</u> point to some concrete evidence in the record in support of these findings to satisfy the substantial evidence test. If the examiner is relying on personal knowledge to support the finding of what is known in the art, the <u>examiner must provide an affidavit or declaration</u> setting forth specific factual statements and explanation to support the finding. See 37 CFR 1.104(d)(2)." See MPEP 2100-144.

Stallman discloses that there are several ways to set a breakpoint: at entry to a function, at a number of lines forward or backward, at the line, at the address, at the next instruction, set a breakpoint when a condition is satisfied, or set a breakpoint when the regular expression is matched (see Stallman, Setting Breakpoints). Stallman further discloses printing a table of all breakpoints set and not deleted (see Stallman, Setting Breakpoints). Stallman discloses setting breakpoints and printing a table of all breakpoints, but Stallman fails to disclose or suggest that there is a corresponding <u>break bit associated with each of a plurality of instruction addresses</u>, as claimed. Accordingly, while Stallman teaches setting breakpoints, it fails to teach or suggest <u>a breakpoint lookup table</u>

with a break bit associated with each of a plurality of instruction addresses, as claimed. As such, the Applicants respectfully invite the Examiner to provider further evidence teaching the recited limitation or kindly withdraw the rejection.

Additionally, the Applicants do not understand Stallman to remedy the failures of Tzori as discussed above.

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - §2143.03 for decisions pertinent to each of these criteria." See MPEP 2100-134.

The above referenced Office Action fails to establish a prima facie evidence in support of the rejection by failing to address and show a disclosure either teaching or suggesting the recited limitation of independent Claim 1 whereby a breakpoint controller sends a break message to the microcontroller whenever an instruction address is encountered that is associated with a set break bit, as claimed. As such, the Applicants respectfully request the withdrawal of the rejection.

Accordingly, Tzori alone or in combination with Stallman has failed to teach or suggest the recited limitations of independent Claim 1. As such, independent Claim 1 is not rendered obvious, under 35 U.S.C. §103, over the cited combination. Independent Claims 7 and 14 recite limitations similar to that of independent Claim 1 and are patentable, under 35 U.S.C. §103, over the cited combination for the same reasons that independent Claim 1 is patentable. Dependent Claims 2-6, 8-13 and 17-20 are patentable by virtue of their dependency. As such, allowance of Claims 1-14 and 17-20 is earnestly solicited.

For the above reasons, the Applicants request reconsideration and withdrawal of the rejections under 35 U.S.C. §103.
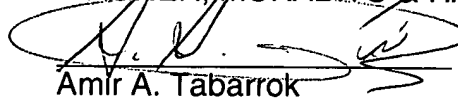
CONCLUSION

In light of the above listed remarks, reconsideration of the rejected Claims is requested. Based on the arguments presented above, it is respectfully submitted that Claims 1-14 and 17-20 overcome the rejections of record and, therefore, allowance of Claims 1-14 and 17-20 is earnestly solicited.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

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